

The Michigan Department of Transportation (MDOT) Inductive Charging Pilot aims to explore the benefits of inductive charging technology for the use of electrified roadways. The Pilot is the first electrified public roadway in the U.S. The proposed two stretches of road are located in Detroit, Michigan: The location selection is currently being finalized and is proposed to be along two stretches of road in Detroit, Michigan: approximately a 0.25-mile segment on 14<sup>th</sup> Street and a 0.75-mile segment on Michigan Avenue.

The project team has identified a 0.25-mile segment on 14th street which allows for piloting of multiple use cases with multiple vehicle types and users. Stationary charging coils located between Michigan Avenue and the Book Depository, and Marantette Street will support additional charging in static mode. The project team is in discussions with the City of Detroit/Michigan Central/Ford to add an optional fourth dynamic system on 14th Street north of Dalzelle on one side of the street.

The Electreon vehicle charging system is based on inductive energy transfer, which means that energy is transmitted over air from the road infrastructure (copper coils under the road surface) to the vehicle receiver. There are three main hardware components in the system:

1. A management unit located at the side of the road (the 'brain'), which allows power to be transferred from the first coil (buried under the road surface) to the secondary coil inside a receiver pad that is installed under the vehicle chassis. It can be aboveground or underground where real estate is limited. The approximate size of the management unit is 5.5 feet by 3.2 feet with a height of 5.9 feet.
2. The roadway infrastructure consists of in-road copper coils that transfer power to the vehicles' receivers. The system is completely passive until there is an authenticated vehicle above the coil.
3. The vehicle receivers that transmit energy directly to the vehicle battery and engine.

The real-time management system (which includes cloud system meters) monitors and manages optimal EV charging at fleet scales, allowing for control oversight. During use, the management unit produces a maximum of 62 decibels during peak fan performance, which correlates to the sound of a car passing by or the ambient sound. When not in use, the management unit produces no sound. Approximately 36" of free space can be left around the management unit for continued access.

## **Initial use cases**

### **Electrified Shuttle Vehicle**

- An electrified shuttle will be deployed by Michigan Central to provide transportation within the community from the Bagley Mobility Hub to Michigan Central/Book Depository to businesses along Michigan Avenue between 14th Street and Rosa Parks Blvd.
  - The shuttle will operate during normal business hours
  - The shuttle will charge in dynamic mode while traveling north and south along 14<sup>th</sup> street between Marantette and Dalzelle, and in static mode when dropping off and picking up passengers at Michigan Central and the Book Depository

The shuttle will travel at posted speed which is between 25 and 35 mph along the route.

**Additional use cases:**

- 1st Mile/Last Mile Delivery
  - Electrified delivery vehicles will charge in dynamic and static modes for package delivery and pick up within Michigan Central and the Book Depository
  - Delivery fleet(s) will potentially also charge in static mode at terminal locations in Southeast Michigan
- Potential Future Use Cases:
  - Rideshare and carshare opportunities
  - Autonomous and/or additional electrified shuttles
  - Campus security and maintenance vehicles

Thank you for your time in reviewing these documents. Please contact us if you have any questions.

Regards,

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